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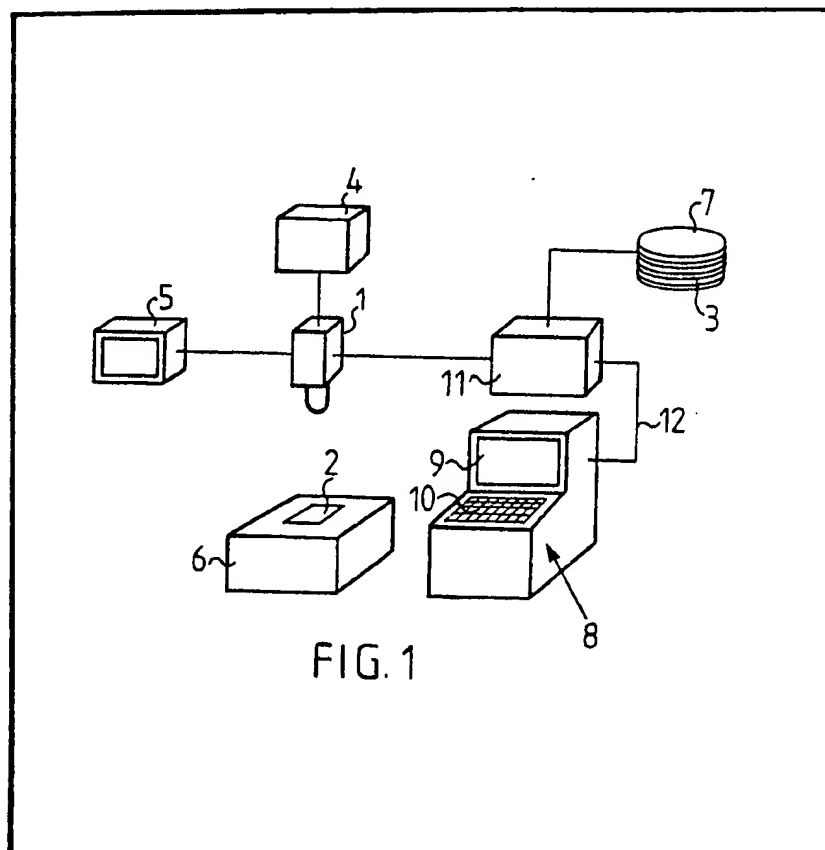
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(54) Method and Apparatus for the Classification of Data

(57) The invention relates to a method and apparatus for the classification or sorting of data.

A scanning camera 1 utilising a CCD scanner produces digital images of data items 2 to be classified. These images are applied at the rate of one

digital image per item of data to a magnetic carrier 3 in the form of a digital recording. A location address is provided for each image or group of items. Data items can be retrieved by keying their address on a keyboard 10 of a consultation terminal 8 so that they appear on the screen 9 of the terminal. A computer 11 serves to encode and transmit the digital images.



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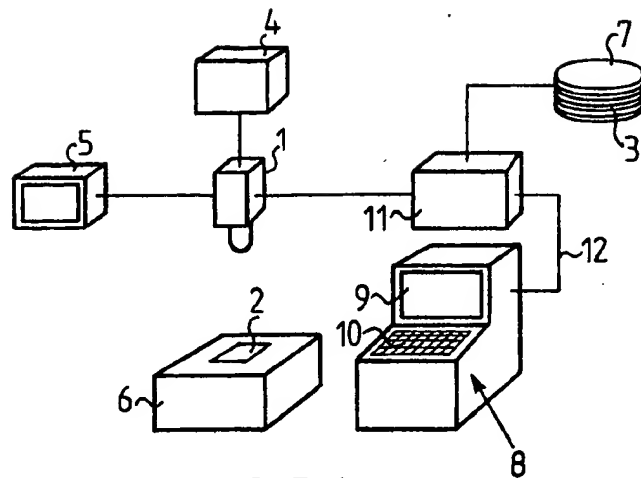


FIG. 1

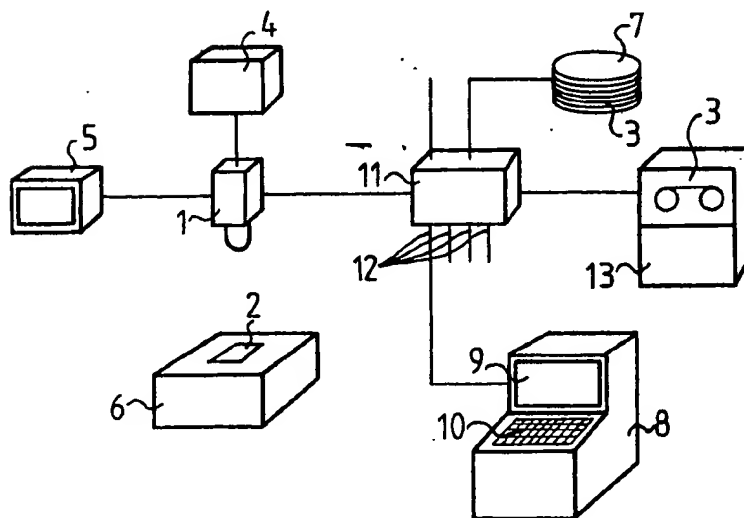


FIG. 2

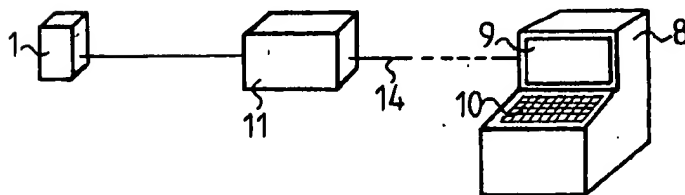


FIG. 3

SPECIFICATION

Method and Apparatus for the Classification of Data

The present invention relates to the classification or sorting of data, in particular document data.

The current methods for the classification of a document can be divided into two categories, namely those based on the conservation of data by putting it on a photographic carrier and those based on the codification and recording of data on an information carrier.

In the case of using a photographic carrier, which is in general formed by a microfilm or microfiche, the data to be conserved and consulted are photographed by a special camera and arranged in reference index systems. Consultation of these index systems is made either manually or by automatic selection. Such a method of classification has the advantage of not necessitating a codification of the data but, on the other hand, possesses amongst other disadvantages that the search is rather slow and difficult, that on updating is very complicated, that such carriers require a laboratory developing process and that, finally, it is not possible for one and the same item of data to be consulted simultaneously by different people.

In the methods utilising data carriers, principally disc or magnetic tapes, the data must be encoded digitally and stored on this carrier. Such a carrier has the advantage, with respect to the methods utilising photographic carriers, then it is possible to have rapid access to a predetermined item of data and that updating of the data is rather easy.

However, encoding on the data carrier takes a considerable time and there exists, moreover, a considerable risk of errors in the codification, which necessitates very careful verification of the encoded data. The encoding therefore constitutes a very difficult stage in this system of classification. Moreover, even a classification of average importance based on this method requires complex and expensive equipment.

One of the objects of the present invention is to reduce the above-mentioned disadvantages of the methods using photographic carriers and data carriers.

The invention seeks in particular to provide a method of classification and documentation according to which the recording of the data is very easy, the access to a determined item of data is very rapid, updating is easy and sure, the quantity of data which can be classified is practically limitless and the consultation of one and the same item of data is possible simultaneously by different people.

By the term "item of data" used in the present description, is to be understood any information occurring in the form of a printed document or other document, in the form of a drawing, a file, etc.

According to the invention the method consists

in transforming and storing this data in the form of a digital recording on a magnetic carrier having one locating address per data item or group of data.

Advantageously, the method according to the invention consists in taking, by means of a scanning camera utilising an arrangement of photodiodes, otherwise known as a "CCD scanner", digital images of the data to be classified and applying the latter, at the rate of one image per data item, onto a magnetic carrier, in the form of a digital recording of the image, this carrier having a location address for each image or group of images, in such a manner that to each item of data corresponds, on the carrier, the recording of a single image which can be located by a corresponding address.

The invention also relates to apparatus for the classification of data, in particular for carrying out the method described above.

This apparatus is characterised in that it comprises a scanning camera utilising a CCD scanner and its monitor screen, at least one buffer memory connected to the said camera for the intermediate recording of the digital image corresponding to an item of data, at least one magnetic carrier for the final recording of the digital image, furnished with an address, a computer to regulate the sending of the digital image from the buffer memory to the magnetic carrier and for encoding the address, and at least one consultation terminal comprising a screen and a keyboard, which is connected to the computer and enabling to access the digital image which is predetermined by the address encoded on the keyboard, the image being reproduced on the screen of the consultation terminal.

The invention will now be further described, by way of example, with reference to the accompanying drawings, in which:—

Figure 1 shows schematically a first embodiment of an installation according to the invention,

Figure 2 is a schematic representation of a second embodiment of an installation according to the invention, and

Figure 3 shows schematically part of third embodiment according to the invention.

In various figures the same reference numbers have been used to designate identical or similar elements.

The invention seeks essentially to provide a method which enables combining the advantages of a system for recording without encoding, particularly systems utilising a photographic carrier, and a classification system with digital access.

In a general manner, the invention consists in transforming and storing this data in the form of digital recording on a magnetic carrier having a location address per data item or group of data.

Thus, the method according to the invention consists in particular, in taking by means of

scanning camera 1 utilising a "CCD scanner", digital images of the data 2 to be classified and in applying the latter, at the rate of one digital image per item of data, on to a magnetic carrier 3 in the form of a digital recording. This magnetic carrier 3 has one location address for each digital image, so that to each item of data digitalised by the camera 1 there corresponds, on the carrier 3, a single digital recording, formed by the digital image of the data furnished with a corresponding address.

In the first embodiment of an installation according to the invention, shown schematically in Figure 1, the scanning camera 1 utilising a CCD scanner is provided with a buffer memory 4 and a monitor screen 5. The data items to be recorded are placed manually or automatically on a support 6 below the camera 1. The installation also comprises a disc memory 7 which serves as a magnetic carrier 3, a consultation terminal 8 having a screen 9 and a keyboard 10, and a computer 11 which serves for encoding and transmitting the digital images.

The data items 2 are scanned and digitalised by the scanning camera 1 utilising a CCD scanner. The buffer memory 4 serves for storing the digital image of an item of data 2 until the entire data is scanned. On the monitor screen 5 the video image of the item of data 2 is reproduced with the digital information stored in the buffer memory 4. Once the item of data has been completely scanned and digitalised, the digital image stored in the buffer memory 4 is transmitted to the computer 11, by which it is provided with an address and then stored in the disc memory 7.

When it is desired to consult the data, the corresponding address is keyed on the keyboard 10 of the consultation terminal 8. The digital recording is then recalled from the disc memory 7 and transmitted, by means of the cable 12, to the consultation terminal 8, where the video image is reproduced on the screen 9.

If the volume of data to be recorded and stored becomes much greater, the installation can be provided with a second magnetic carrier 3 which is indicated in Figure 2 by reference numeral 13. This second magnetic carrier is, for example, a large capacity magnetic tape memory.

Several consultation terminals 8 can be connected to the computer 11, enabling simultaneous access by several users to one and the same item of data. The cables 12 of Figure 2 indicate the various connections of the computer 11 with the consultation terminals 8, which are identical to that shown in the figures.

It is not necessary for the camera 11, the computer 11 and the consultation terminals 8 to be installed in the same place. The consultation terminals 8 could be situated in different places and remote at any desired distance from the camera 1 and the computer 11, the digital data information being transmitted from the computer 11 to the consultation terminals 8 by communication cables, indicated in Figure 3 by

reference numeral 14; these communication cables, being e.g., telephone lines.

It is, of course, understood that the invention is not limited to the embodiments described and that many variations can be envisaged without departing from the scope of the invention.

The invention can thus be easily integrated directly into an existing information system. The invention then becomes a peripheral of the central computer, the terminals serving both as terminals for the data system and as consultation terminals for the installation according to the invention.

Furthermore, the high density magnetic tape memory can be replaced by another high capacity memory, such as for example a holographic memory or an optical numeric disc memory.

Finally, so as to minimize the digital data necessary for each item of data to be stored, the white background of the data images can be eliminated by only indicating their positions by a digital encoding.

Claims

1. Method for the classification of data, characterised in that it consists in transforming and storing this data in the form of a digital recording on a magnetic carrier having one locating address per data item or group of data.

2. Method for the classification of data according to claim 1, characterised in that it consists in taking, by means of a scanning camera utilising a CCD scanner, digital images of the data to be classified and in applying the latter, at the rate of one digital image per item of data, to a magnetic carrier in the form of a digital recording, this carrier having one location address for each image or group of images, such that to each item of data there corresponds, on the carrier, the recording of a single image which can be located by a corresponding address.

3. Method according to claim 2, characterised in that the data items are scanned and digitalised by said scanning camera utilising a "CCD scanner", so as to form a digital image of each item of data to which is added a locating address before it is stored on the said magnetic carrier.

4. Method for the classification of data substantially as hereinbefore described with reference to the accompanying drawings.

5. Apparatus for the classification of data, characterised in that it comprises a scanning camera utilising a CCD scanner, and its monitor screen, a buffer memory connected to said camera for intermediate recording of the digital image corresponding to an item of data, at least one magnetic carrier for the final recording of the said digital image, furnished with an address, a computer for regulating the sending of the digital image from the said buffer memory to the said magnetic carrier and for encoding the said address, and at least one consultation terminal comprising a screen and a keyboard, connected to the computer, and enabling to access the image of an item of data predetermined by the address encoded on the said keyboard, the image being

reproduced on the screen of said consultation terminal.

5 6. Apparatus according to claim 5, characterised in that the said magnetic carrier is a disc memory.

7. Apparatus according to claim 5 or 6, characterised in that it comprises a second magnetic carrier having a greater recording capacity than said first magnetic carrier.

10 8. Apparatus according to claim 7, characterised in that the said second magnetic carrier is a large capacity magnetic tape.

15 9. Apparatus according to any of claims 5 to 8, characterised in that plural consultation terminals are connected to the computer thereby enabling simultaneous access by several users to one and the same item of data.

20 10. Apparatus according to any of claims 5 to 9, characterised in that the consultation terminal is not located at the same place as the said scanning camera utilising a "CCD scanner" and the said computer and in that the connection between the said computer and the said terminal is made by a communication cable.

25 11. Apparatus according to claim 10, characterised in that the said communication cable is a telephone line.

30 12. Apparatus for the classification of data substantially as hereinbefore described with reference to Figure 1, or Figure 2, or Figure 3 of the accompanying drawings.